

What is claimed is:

1. A decoupler assembly for transferring torque between a drive shaft and an endless drive element of an automotive engine, said decoupler assembly comprising:

a hub configured to be fixedly secured to the shaft, said hub extending axially between first and second ends;

a pulley rotatably mounted on said hub and adapted to be drivingly engaged with the endless drive element;

a carrier mounted about said second end of said hub and operatively coupled between said hub and said pulley for selective rotation therewith, said carrier including first and second sides and an anti-ramp up boss projecting from one of said sides;

a torsion spring extending between said hub and said carrier for transferring torque therebetween; and

a thrust plate fixedly mounted on said second end of said hub and having a slot formed therein extending between first and second ends for receiving said anti-ramp up boss; said anti-ramp up boss traveling within said slot between said first and second ends for limiting rotation between said carrier and said thrust plate while selectively preventing rotational movement of said torsion spring relative to said hub and carrier.

2. A decoupler assembly as set forth in claim 1 wherein said torsion spring is compressed axially between said hub and said carrier.

3. A decoupler assembly as set forth in claim 2 wherein said hub includes a helical first slot formed therein defining a ramped first locating surface terminating at an abutment wall.

4. A decoupler assembly as set forth in claim 3 wherein said carrier includes a helical second slot formed therein defining a ramped second locating surface terminating at an abutment wall.

5. A decoupler assembly as forth in claim 4 wherein said torsion spring extends axially between a hub end retained in said helical first slot and an opposite carrier end retained in said helical second slot.

6. A decoupler assembly as set forth in claim 5 wherein said torsion spring includes a hub distal end torsionally engaging said abutment wall of said hub and a carrier distal end torsionally engaging said abutment wall of said carrier for transferring torque between said carrier and hub.

7. A decoupler assembly as set forth in claim 6 further including a clutch element seated between said hub and said pulley for selectively transferring rotational torque from said pulley to said hub and enabling overrunning of said hub relative to said pulley.

8. A decoupler assembly as set forth in claim 7 wherein said clutch element includes a plurality of helical coils in frictional engagement with said pulley and an

end coupled to said carrier, said clutch element expandable against said pulley to selectively couple said hub and said pulley.

9. A decoupler assembly as set forth in claim 8 wherein said pulley includes an inner clutch surface extending between first and second ends for frictional engagement with said coils of said clutch element to selectively transfer torque between said hub and said pulley.

10. A decoupler assembly as set forth in claim 9 wherein said carrier includes a hooked first slot for receiving and retaining said end of said clutch element.

11. A decoupler assembly as set forth in claim 10 further including a bearing assembly pressed between said hub and said inner surface of said pulley for rotatably coupling said hub and said pulley.

12. A decoupler assembly for transferring torque between a drive shaft and an endless drive element of an automotive engine, said decoupler assembly comprising:

a hub configured to be fixedly secured to the shaft, said hub extending axially between first and second ends;

a pulley rotatably mounted on said hub and adapted to be drivingly engaged with the endless drive element;

a carrier mounted about said second end of said hub and operatively coupled between said hub and said pulley for selective rotation therewith, said carrier

including first and second sides and an anti-ramp up slot formed in one of said sides extending first and second ends;

a torsion spring extending between said hub and said carrier for transferring torque therebetween; and

a thrust plate fixedly mounted on said second end of said hub and having a tab projecting therefrom; said tab traveling within said anti-ramp up slot between said first and second ends for limiting rotation between said carrier and said thrust plate while preventing rotational movement of said torsion spring relative to said hub and carrier.

13. A decoupler assembly as set forth in claim 12 wherein said torsion spring is compressed axially between said hub and said carrier.

14. A decoupler assembly as set forth in claim 13 wherein said hub includes a helical first slot formed therein defining a ramped first locating surface terminating at an abutment wall.

15. A decoupler assembly as set forth in claim 14 wherein said carrier includes a helical second slot formed therein defining a ramped second locating surface terminating at an abutment wall.

16. A decoupler assembly as forth in claim 15 wherein said torsion spring extends axially between a hub end retained in said helical first slot and an opposite carrier end retained in said helical second slot.

17. A decoupler assembly as set forth in claim 16 wherein said torsion spring includes a hub distal end torsionally engaging said abutment wall of said hub and a carrier distal end torsionally engaging said abutment wall of said carrier for transferring torque between said carrier and hub.

18. A decoupler assembly as set forth in claim 17 further including a clutch element seated between said hub and said pulley for selectively transferring rotational torque from said pulley to said hub and enabling overrunning of said hub relative to said pulley.

19. A decoupler assembly as set forth in claim 18 wherein said clutch element includes a plurality of helical coils in frictional engagement with said pulley and an end coupled to said carrier, said clutch element expandable against said pulley to selectively couple said hub and said pulley.

20. A decoupler assembly as set forth in claim 19 wherein said pulley includes an inner clutch surface extending between first and second ends for frictional engagement with said coils of said clutch element to selectively transfer torque between said hub and said pulley.

21. A decoupler assembly as set forth in claim 20 wherein said carrier includes a hooked first slot for receiving and retaining said end of said clutch element.

22. A decoupler assembly as set forth in claim 21 further including a bearing assembly pressed between said hub and said inner surface of said pulley for rotatably coupling said hub and said pulley.